

REMARKS

The present request is submitted in response to the final Office Action dated July 9, 2007, which set a three-month period for response, making this response due by October 9, 2007

Claims 1-18 are pending in this application.

In the final Office Action, claims 1-12 and 16-17 were rejected under 35 U.S.C. 103(a) as being unpatentable over Keidl et al in view of Wu (US PG Pub No. 20020109485). Claims 13-14 was rejected under 35 U.S.C. 103(a) as being unpatentable over Keidl et al in view of Wu and further in view of U.S. Patent No. 5,459,652 to Faulk. Claim 15 was rejected under 35 U.S.C. 103(a) as being unpatentable over Keidl et al in view of Wu, further in view of Faulk, and further in view of U.S. Patent No. 6,434,025 to Shiral et al. Claim 18 was rejected under 35 U.S.C. 103(a) as being unpatentable over Keidl et al in view of Wu, further in view of U.S. Patent No. 5,345,094 to Usui et al.

The Applicant respectfully disagrees with the grounds for rejection in the final Office Action.

In the final rejection, the Examiner is of the opinion that claims 1 to 12 and 16 to 17 are rendered obvious by US 5,617,007 to Keidl et al when taken in combination with the newly cited reference to Wu. The Examiner states that Keidl discloses almost all of the features of pending claim 1, with the exception of the feature, according to which the charge transformer is separated from the line

voltage during the resting phase. It is, however, according to the Examiner, well known to separate a charge transformer from the line voltage.

For example, the Examiner argues, Wu discloses a battery charging device (see Fig. 2 and the abstract of this reference), which uses a switch (SW1) for separating the charge transformer (1) from the line voltage during a phase, in which the battery is not charged (so-called "non-conductive time period"). Further, the Examiner maintains that this reference teaches that the charging voltage during a so-called "conductive period" is used for charging the battery and that the current of the battery is disconnected during the "non-conductive period" (see paragraphs [0032] and [0025]).

According to the Examiner this renders obvious the subject-matter of pending claim 1. In particular, the Examiner argues that it is obvious for a person skilled in the art to use a switch for separating the charge transformer from the line voltage during a resting phase and to connect the charge transformer with the line voltage during a charging phase for charging the battery.

The Applicant respectfully disagrees with this analysis. In particular, the reference to Wu refers to a method for operating a mains-operated charger for a battery, wherein the battery is either charged (during the "conductive time period") or the battery is not charged (during the "non-conductive time period"). This reference does not disclose any kind of a refreshing phase, in which the charging of the battery is maintained at a more or less constant value by monitoring the charging value and cyclically charging the battery if the charging falls below a defined threshold. Wu merely teaches what is self-evident to a

person skilled in the art anyway, namely to connect the charge transformer with the line voltage when charging the battery and to separate the charge transformer from the line voltage at the end of the charging phase.

Wu does not teach separating the charge transformer of all things during the resting phase of a maintaining mode for keeping the battery in a charged state. The Applicant submits that the resting phase according to the present invention cannot be compared with the phase known from Wu subsequent to the charging phase and during which the battery is not charged at all. During the resting phase according to the invention the battery voltage is monitored. The battery self-discharges from an upper threshold voltage to a lower threshold voltage which is lower than the upper threshold voltage but is higher than the rated voltage of the battery.

This is totally different in the phase disclosed in Wu, during which no charging of the battery what so ever is performed. During this phase the battery can discharge to any extent. In particular, it is possible and most probable that within a relatively short time period the battery is discharged to a voltage below the nominal voltage of the battery, which of course can damage the battery.

Of course, it is known from the prior-art to separate a charge transformer at any point in time, preferably after the charging phase and as long as the battery is not charged, completely from the line voltage. The question is, however, if a person skilled in the art had a motivation to separate the charge transformer just during the resting phase of a maintaining mode. The practitioner

skilled in the art would have no motivation whatsoever because neither Keidl nor Wu discloses the above feature

Rather, it is explicitly disclosed in paragraph [0026] of Wu that the control circuit (4) determines a battery voltage only at the end of the charging phase in order to determine whether or not a further charging phase is necessary directly after the completed charging phase. A further charging phase is, for example, necessary if the battery does not reach a defined voltage value at the end of the first charging phase. If, however, the battery voltage is beyond the defined voltage value at the end of the first charging phase, the control switch (SW1) is opened, in order to terminate the first charging phase. The charging phase is terminated once and for all. The time period after the charging phase cannot be regarded a resting phase of a maintaining mode in terms of the present invention because the battery is not refreshed (re-charged), as soon as the voltage falls below a lower threshold value, which is larger than the nominal voltage of the battery. During the period after the charging phase the voltage is not monitored, nor is there any determination of a necessity for a refresh of the battery.

Paragraph [0029] of Wu merely discloses that in the embodiment shown in Fig. 3 the battery charging device is used for starting a vehicle motor. For this purpose, the vehicle motor is connected with the line voltage by means of the switch (SW1) via an additional control circuit (5). Wu does not disclose terminating the phase following the charging phase as soon as the battery voltage falls below a lower threshold value, which is larger than the nominal


voltage of the battery. Furthermore, a refreshing phase for recharging the battery on its higher threshold voltage again is not mentioned in Wu.

The Applicant therefore respectfully submits that independent claim 1 is not rendered obvious by the cited reference combination. It is respectfully submitted that since the prior art does not suggest the desirability of the claimed invention, such art cannot establish a prima facie case of obviousness as clearly set forth in MPEP section 2143.01. Please note also that the modification proposed by the Examiner would change the principle of operation of the prior art, so that also for this reason the references are not sufficient to render the claims prima facie obvious (see the last paragraph of the aforementioned MPEP section 2143.01).

For the reasons set forth above, the Applicant respectfully submits that claims 1-18 are patentable over the cited art. The Applicant further requests withdrawal of the final rejection and allowance of the claims as previously presented.

Should the Examiner have any further comments or suggestions, the undersigned would very much welcome a telephone call in order to discuss appropriate claim language that will place the application into condition for allowance.

Respectfully submitted,


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